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EXAMINER	
EVANS, KIMBERLY L	

ART UNIT	PAPER NUMBER
3629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/669,907	LOWE ET AL.	
	Examiner	Art Unit	
	KIMBERLY EVANS	3629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/29/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. This action is in reply to the application filed on September 24, 2003.

2. Claims 1-18 are currently pending and have been examined.

Information Disclosure Statement

3. The Information Disclosure Statement filed on January 29, 2004 has been considered. An initialed copy is enclosed herewith.

Drawings

4. The drawings are objected to because the unlabeled rectangles, squares, and shapes in Figure 1 should be provided with descriptive text labels. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112 - 2nd Paragraph

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 16, limitations 8 and 9, and Claim 18 refer to "the difference P value". There is insufficient antecedent basis for this limitation in the claim. For purposes of compact prosecution, Examiner will consider "the difference P value" to be "said plurality of difference P values".

Claim Rejections - 35 USC § 101

7. The following is a quotation of the first paragraph of 35 U.S.C. 101:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 1-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

9. The basis of this rejection is set forth in a two-prong test of:
(1) whether the invention is within the technological arts; and
(2) whether the invention produces a useful, concrete, and tangible result.
For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process (also a method) claim to pass muster, the recited process must somehow apply, involve, use or advance the technological arts.

10. Claims 1, 9, 12, and 16 do not qualify as a statutory process since they recite purely mental steps. To qualify as a § 101 statutory process, the claim should positively recite the other statutory class (thing or product) to which it is tied. For example, by identifying the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed, for example by identifying the material that is being changed to a different state.

11. Claims 1, 9, 12, and 16 only recite abstract ideas. The recited steps of merely creating proportionality metrics and/or P values to analyze warranty data do not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. The methods described are subjective in that warranty claim data is an inherently

unstable process. Claims data is usually incomplete and unreliable and can seldom be considered to be a random sample, which is the theoretical basis for most standard statistical analyses. The data will be incomplete because failures outside the warranty period will rarely be reported and some failures within the warranty period will not be claimed. They will be unreliable because of false claims, failure to report the actual time of failure accurately, and for other reasons related to collection and compilation of claim data. Aside from accurately tracking claims and their cost associated to compare claims, it is also subject to other variations such as time, place and usage environment as well as date of sale of a vehicle and accurate/consistent segregation of claim types. The steps in Claims 1, 12, and 16 only constitute an idea of how to analyze warranty data. The dependent claims do not remedy this flaw and are rejected for the same reason. Claim 16 does not positively describe the apparatus (system) in the body of its limitations.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

(a) Determining the scope and contents of the prior art.

(b) Ascertaining the differences between the prior art and the claims at issue.

(c) Resolving the level of ordinary skill in the pertinent art.

(d) Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 1, 2, 9, 12, and 16 are rejected as being unpatentable over Product Warranty Handbook, edited by Wallace R. Blischke, D.N. Prabhakar Murthy., Chapter 9, Statistical Analysis of Warranty Claims Data, J.D. Kalbfleisch and J.F. Lawless, c 1996; herein referred to as "Lawless"; in view of Probability and Statistics for Engineering and the Sciences, 4th Edition c 1995, Chapter 16 Quality Control Methods, Jay L. Devore, herein referred to as "Devore".

15. With respect to Claims 1, 9, 12, and 16,

Lawless discloses the limitations as shown:

- *receiving first warranty claim data for a first item over a first time interval;*
- *receiving first warranty claim data for a first item over a first time interval with the first time interval including a plurality of subintervals and the number of warranty claims for the first item in each subinterval within the plurality of subintervals;*
- *receiving first warranty claim data for at least one second item over the first time interval;*
- *receiving second warranty claim data for the first item over a second time interval that is subsequent to the first time interval;*

- *receiving second warranty claim data for the at least one second item over the second time interval;*
- *receiving second warranty claim data for the first item over a second time interval that is subsequent to the first time interval, including the number of warranty claims and the number of first items in service in the second time interval;*
- *receiving the number of the first item covered under warranty for each subinterval in the plurality of subintervals;*
- *receiving the number of first items that are in service for a plurality of subintervals within the first time interval, and receiving the number of warranty claims for the first item within each subinterval of the plurality of subintervals;*
- *receiving second warranty claim data for the first item over a second Ume interval that is subsequent to the first time interval, with the second time interval including a second plurality of subintervals, each equal in length to corresponding subintervals of the first time interval, including the number of warranty claims and the number of first items in service in each subinterval within the second plurality of subintervals;*

(see at least pages 232-243 and Table 9.1, Table 9.2, and Table 9.3: "…Section 9.2 presents methods of age-specific claims analysis when complete data on both claims and units sold are available…"; "…we assume that units are sold on calendar days, 0, 1, $\ldots t$, with $N(d)$ = number of units sold on day d, $d = 0,1,\ldots t$. We consider claims data that have accrued up to day $T \geq t$ and assume that we can determine $n*(t,a)$= number of claims on day t for units sold on day $t-a, 0 \leq a \leq t \leq T$. Here the variable a is the age of the unit at the time t of a claim…" ; page 233, second-fourth paragraphs: "…claims may be

grouped or aggregated according to one or more of the following: (age, time period, or date of sale…..we use n^* and n with capital letter arguments:

$n^*(P,A)=\sum_{t\in P}\sum_{a\in A} n^*(t,a)$ and $n^*(D,A)=\sum_{d\in D}\sum_{a\in A} n^*(d,a)$ where D, P and A represent sets of sales days, time period days and age days, respectively . In what follows, we suppose that $N(d)$, the number of units sold on day d, is known, d = 0,1...., τ. To develop methods of analysis, we assume that claims occur according to some random process such that, given $N(0)$, ..., $N(\tau.)$, $n^*(t,a)$ and $n(d,a)$ have (conditional) expected values $\mu^*(t,a)=\mathrm{E}\{n^*(t,a)\}$, $\mu(d,a)=\mathrm{E}\{n(d,a)\}$. We similarly write $\mu^*(P,A)$ and $\mu(D,A)$ for grouped data…; "…we may want to consider claims of several types simultaneously….for example $n^*_j(t,a)$ refers to the number of type *j* claims on day *t*, for units of age a ….")

- *creating a proportionality metric for the first item relative to the second time interval;*
- *creating a proportionality metric for the first item relative to the second time interval by dividing the number of warranty claims in the second time interval by the number of the first item in service in the second time interval;*
- *creating a P-value for each subinterval in the first plurality of subintervals by dividing the number of warranty claims for the first item in each of the subintervals by the number of first items in service for the corresponding subinterval;*
- *dividing the number of warranty claims for the subinterval by the number of first items in service for the corresponding subinterval to create a plurality of P-values*

- *dividing the number of warranty claims for the subintervals, dividing the number of warranty claims for the subinterval by the number of first items in service for the corresponding subinterval to create a plurality of P-values*
- *subtracting the P-values in each interval in the second plurality of subintervals from the P-values in each corresponding subinterval in the first plurality of subintervals to create a plurality of difference P-values;*

(see at least page 234-240, and appendix A1: Variance Estimates for Age-Specific Expected Claims Estimates, and A2: Variance Estimates (9.28) for Prediction with Grouped Data: "...When $N(d)$'s are known, we can estimate the □*(a)'s* from the warranty claim counts $n^*(t,a)$ up to day *T* (i.e., with $0 \le a \le t \le T$) as $\hat{\lambda}(a) = \frac{n_T(a)}{R_T(a)}, a = 0,1,....., T$ where $n_T(a) = \sum_{t=a}^{T} n^*(t,a) = \sum_{d=0}^{T-a} n(d,a)$ is the total number of age a claims occurring up to day□*and* $R_T(a) = \sum_{d=0}^{T-a} N(d)$ is the total number of units that have reached age a on or before day □.... These estimates and the corresponding estimates of cumulative claims $\hat{\Lambda}(a) = \sum_{u=0}^{a} \hat{\lambda}(u)$ are very useful..." ; page 235: "...Variance estimates for $\lambda(a)$ and $\hat{\Lambda}(a)$ can be obtained under various assumptions and derivations are outlined in the appendix. If the $n(d,a)$'s are independent Poisson variables, then var $\{n(a)\} = R(a)\lambda(a)$ and the variance of $\hat{\Lambda}(a)$ is estimated by $\hat{V}_p(a) = \widehat{\text{var}}\{\hat{\Lambda}(a)\} = \sum_{u=0}^{a} \frac{\hat{\lambda}(a)}{R(u)}$. This estimate is reasonable if units generate claims randomly and in an identical fashion....."; page 239: "...The easiest approach to variance estimation is to assume independence of the

$n^*(t,a)$'s along with (9.6). Then $\text{var}\{n(A_i)\} = \sigma^2 \Lambda(A_i) R(A_i)$, where we continue to assume that the $\Lambda(a)$'s are constant over A_i,...Thus, by (9.15), $\text{var}\{\hat{\Lambda}(Ai)\}$ is estimated by $\hat{V}(Ai) = \sigma^2 \frac{\hat{\Lambda}(Ai)}{R(Ai)}$ a suitable estimate for $\sigma^2 = \frac{1}{df} \sum_j \sum_i \frac{\{n^*(Pj,Ai) - \hat{\mu}(Pj,Ai)\}^2}{\hat{\mu}(Pj,Ai)}$ where the sum ranges over all of the time periods (Pj) and age intervals (Ai) in data, *df* equals the number of terms in the sum minus the number of age intervals, and $\mu(Pj,Ai) = \text{E}\{n^*(Pj,Ai)\}$ is estimated by $\hat{\mu}(Pj,Ai) = \frac{\hat{\Lambda}(Ai)}{ai - ai - 1} \sum_{a=al-1}^{al-1} \sum_{t \in Pj} N(t-a)$ As before, the $N(d)$'s will need to be estimated if sales data are available only in aggregate form...Confidence limits for $\Lambda(Ai)$'s or sums of $\Lambda(Ai)$'s may be obtained by treating the $\hat{\Lambda}(Ai)$'s as independent and approximately normally disturbed with means $\Lambda(Ai)$ and variances $\hat{V}(Ai)$..."; Appendix A1: "...let m be the number of products sold by time T, and for unit i, let d_i be the day of sale and $n(u)$ the number of age u claims. Then the robust estimate for $\text{var}\{\hat{\Lambda}(a)\}$ is $\hat{V}_s(a) = \sum_{i=1}^{m} \{ \min_{u=0}^{(a, T-d_i)} \frac{1}{R(u)} [n_i(u) - \hat{\lambda}(u)] \}^2$ ...")

- *comparing the proportionality metric to the upper control limit;*
- *comparing the difference P-value for at least one subinterval of the second plurality of subintervals to the upper limit;*

(see at least pages 245-247, and Figures 9.3 and 9.4: "...Plots like Figure 9.3 are very useful for tracking warranty claims experience as time progresses. They may also be used to compare claim rates for different time periods or groups of products...The plots are based on all claims reported up to T=547 days, of which there were 5701. They reveal the striking fact that average claims per vehicle appear to be very similar for all periods except Period 3 (November-January), for which claims are much higher...

Lawless discloses all of the limitations described above, Lawless does not disclose the following limitations, but Devore however describes the following:

- *generating a statistical control chart for the first item, including at center line and an upper control limit, by employing a statistical process control methodology;*
- *generating a statistical control chart for the first item, including at center line and an upper control limit, by employing a statistical process control methodology to the plurality of difference P-values*;
- *determining the centerline and the upper control limit from the plurality of P-values.*
- *generating a report when the proportionality metric exceeds the upper control limit*
- *generating a report when the difference P-value for the at least one subinterval of the second plurality of subintervals exceeds the upper control limit.*

(see at least pg. 658-660; Section 16.1 General Comments on Control Charts, Figure 16.1 A prototypical control chart; paragraph 3: "...Depending on the aspect of the process under investigation, some statistic, such as the sample mean or sample proportion of defective items, is chosen. The value of this

statistic is then calculated for each sample in turn. A traditional control chart then results from plotting these calculated values over time…notice that in addition to the plotted points themselves, the chart has a center line and two control limits….referring to an UCL = upper control limit and LCL = Lower control limit…"; page 659: "…depending on the aspect of the process under investigation, some statistic, such as the sample mean or sample proportion of defective items, is chosen. The value of this statistic is then calculated for each sample in turn. A traditional control chart then results from plotting these calculated values over time, as illustrated in Figure 16.1…; page 660, second paragraph: "…the height of the center line is estimated from the data. If the points on the chart all lie between the two control limits, the process is deemed to be in control….an out-of-control "signal" occurs whenever a plotted point falls outside the limits….")

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless with the statistical control chart of Devore because the control charts would provide a mechanism for recognizing situations where assignable causes may be adversely affecting product quality. The statistical control chart is a conventional means of communication and reporting. It would quickly identify an out-of-control situation, hence an investigation could be conducted to identify causes and take corrective action.

16. With respect to Claim 2,

Lawless and Devore disclose all of the limitations described above; Lawless further discloses the following limitations:

- *said second warranty claim data for the first item includes a certain number of claims, the second warranty claim data for the at least one second item includes a certain number of claims*; (see at least pg. 232, Section 9.2 Simple

Age-Specific claims Analysis, 9.2.1 Notation and Assumptions: "…we similarly write $\mu^*(P,A)$ and $\mu(D,A)$ for grouped data…; "…we may want to consider claims of several types simultaneously….for example $n^*_j(t,a)$ refers to the number of type *j* claims on day *t*, for units of age a …."';

- *said proportionality metric is created by adding the certain number of claims for the first item to the certain number of claims for the at least one second item to create a sum, and dividing the certain number of claims for the first item by the sum.* (see at least Section 9.2.3 Grouped Data, pages 238-240: "…suppose that claims are grouped into age intervals $Ai=[ai-1, ai)$ with $a_0=0<a_1<a_2<\cdots$. In this case, we seek to estimate the expected number of claims for that interval,

$\Lambda(A_i)=\sum_{a=a_{i-1}}^{a_i-1}\lambda(a)$. A natural estimate is $\hat{\Lambda}(A_i)=\frac{n(A_i)}{R(A_i)}$

…where $n(A_i)=\sum_t n^*(t,A_i)$ = number of claims on units of age $a\in A_i$

$R(A_i)=\frac{1}{a_i-a_{i-1}}\sum_{a=a_{i-1}}^{a_i-1}R(a)$ where $R(a)=\sum_{d=0}^{T-0}N(d)$, as before…..The easiest approach to variance estimation is to assume independence of the $n^*(t,a)$'s along with (9.6). Then $\mathrm{var}\{n(A_i)\}=\sigma^2\Lambda(A_i)R(A_i)$, where we continue to assume that the □a)'s are constant over Ai, …Thus, by (9.15), $\mathrm{var}\{\hat{\Lambda}(Ai)\}$ is estimated by $\hat{V}(Ai)=\sigma^2\frac{\hat{\Lambda}(Ai)}{R(Ai)}$ a suitable estimate for $\sigma^2=\frac{1}{df}\sum_j\sum_i\frac{\{n^*(Pj,Ai)-\hat{\mu}(Pj,Ai)\}^2}{\hat{\mu}(Pj,Ai)}$ where the sum ranges over all of the time periods (Pj) and age intervals (Ai) in data, *df* equals the number of

terms in the sum minus the number of age intervals, and $\mu(Pj, Ai) = \mathrm{E}\{n*(Pj, Ai)\}$ is estimated by $\hat{\mu}(Pj, Ai) = \frac{\hat{\Lambda}(Ai)}{ai - ai-1} \sum_{a=ai-1}^{ai-1} \sum_{t \in Pj} N(t-a)$ As before, the $N(d)$'s will need to be estimated if sales data are available only in aggregate form…Confidence limits for $\Lambda(Ai)$'s or sums of $\Lambda(Ai)$'s may be obtained by treating the $\hat{\Lambda}(Ai)$'s as independent and approximately normally disturbed with means $\Lambda(Ai)$ and variances $\hat{V}(Ai)$…")

17. Claims 3-7, and 15 are rejected as being unpatentable Lawless, in view of Devore, in further view of Bovarnick et al, US Patent No US 6,704,015 B1.

18. With respect to Claim 3,

Lawless and Devore disclose all of the limitations described above. Lawless further discloses the following:

determining a plurality of proportionality metrics over consecutive subintervals within the first time interval; (see at least page 241, Example 9.2, Figure 1, Table 9.3, page 242-243: "…If claims data are grouped into larger age classes, we use (9.15) to estimate the expected claims per unit for each class. The last five columns of Table 9.3 show results when age at claim is assigned to classes 0-30 days, 31-60 days, and so on, as shown in column 4. Column 5 shows the total claims $n(A_i)$ [see 9.16)] for each age class (A_i), and column 6 shows $R(A_i)$ as in (9.16) but with $R(a)$ defined as in (9.21) to allow for reporting delays. Column 7 shows the estimated average claims per unit $\hat{\Lambda}(A_i)$ for each age class, and column 8 the cumulative estimates $\hat{\Lambda}(a_i) = \sum_{j=1}^{i} \hat{\Lambda}(A_j)$…"; page 245, Figure 9.3:

"…Plots like Figure 9.3 are very useful for tracking warranty claims experience as time progresses. They may also be used to compare claim rates for different time periods or groups of products…")

Lawless, and Devore disclose all of the limitations described above; Devore further discloses the following:

- *calculating an initial centerline and initial upper and lower control limits;* (see at least pages 658-660, Figure 16.1, and paragraph 3: "...Depending on the aspect of the process under investigation, some statistic, such as the sample mean or sample proportion of defective items, is chosen. The value of this statistic is then calculated for each sample in turn. A traditional control chart then results from plotting these calculated values over time..... the chart has a centerline and two control limits (referring to UCL=upper control limit and LCL=lower control limit).

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless with the statistical control chart of Devore because the statistical control charts would provide a mechanism for recognizing situations where assignable causes may be adversely affecting product quality. The statistical control chart is a conventional means of communication and reporting. It would quickly identify an out-of-control situation, and an investigation could be conducted to identify causes and take corrective action.

Lawless and Devore disclose all of the limitations described above. The combination of Lawless and Devore does not disclose the following limitation; but Bovarnick however discloses the following:

- *replacing each proportionality metric, within the plurality of proportionality metrics, that exceeds the initial upper control limits with the upper control limit,* (see at least Figure 20 flowchart, column 28, lines 38-43: "…a predetermined user, such as a process owner, is automatically notified, for example, by email, if the control limits calculated in step 2008 are determined to have been exceeded in a predetermined fashion, for example, the control limit is exceeded by a set amount or a predetermined number of consecutive data points exceed the control limit. In step 2012, data is corrected or a chart definition is changed…")

- *replacing each proportionality metric, within the plurality of proportionality metrics, that is less than the initial lower control limit with the lower control limit to create a modified plurality of proportionality metrics;* (see at least column 17, lines 21- 34: "…Recalibration then is simply the adjustment…Each time a chart is recalibrated, the "old" control limits are retained and associated with data points less than (older) than the "cutoff" point (back to the next oldest cutoff point). The calibration routine is executed any time the user presses the calibrate button from the user interface. The routine is also executed each night whereby the engine examines every chart in the database looking for charts which require calibration. When a chart requiring calibration is found, new control limits are computed using available data points and the control variable settings. The engine will always keep a chart current even when a user does not press the "calibrate" button…")

- *recalculating the centerline based on the modified plurality of proportionality metrics.* (see at least column 12, Table 2: "…auto_calibrate: …this switch turns on and off automatic calibration of control limits. When on, the engine

will automatically compute control limits. When off, the analyst must specify control limit values...; column 11, lines 45-64: "…This feature is valuable when an extreme outlier begins to influence the mean, causing a run to occur because the centerline has shifted. The extreme value of point 13, however, has caused the mean 818 to be higher than it would otherwise be and now the remainder of the chart is in a run below the mean. The control limits are also much wider than they should be due to the high average standard deviation caused by point 13. The exclude feature of the engine allows point 13 to be "excluded" from calculations yet remain on the chart so that it can be properly considered by the appropriate person or people. ..")

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless, and the statistical control chart of Devore with the auto calibrate engine of Bovarnick because the would provide a more efficient means for recalibration and recalculation of the center line and control limits hence, more meaningful and comprehensive statistical control charts as it relates to reporting and/or communication quality concerns.

19. With respect to Claims 4 and 5,

Lawless, and Devore disclose all of the limitations described above; Lawless further discloses the following limitations:

- *receiving third warranty claim data for the first item and for the at least one second item over a third time interval that is consecutive to the second time interval;*
- *creating a second proportionality metric for the first item relative to the third time interval;*

- *receiving fourth warranty claim data for the first item and for the at least one second item over a fourth time interval that is consecutive to the third time interval;*
- *creating a third proportionality metric for the first item relative to the fourth time interval;*
- *receiving fifth warranty claim data for the first item and for the at least one second item over a fifth time interval that is consecutive to the fourth time interval;*
- *creating a fourth proportionality metric for the first item relative to the fifth time interval;*
- *receiving sixth warranty claim data for the first item and for the at least one second item over a sixth time interval that is consecutive to the fifth time interval;*
- *creating a fifth proportionality metric for the first item relative to the sixth time interval;*
- *receiving seventh warranty claim data for the first item and for the at least one second item over a seventh time interval that is consecutive to the sixth time interval;*
- *creating a sixth proportionality metric for the first item relative to the seventh time interval;*
- *receiving eighth warranty claim data for the first item and for the at least one second item over a eighth time interval that is consecutive to the seventh time interval;*
- *creating a seventh proportionality metric for the first item relative to the eighth time interval;*

- *receiving ninth warranty claim data for the first item and for the at least one second item over a ninth time interval that is consecutive to the eighth time interval;*
- *creating a eighth proportionality metric for the first item relative to the ninth time interval;*
- *receiving tenth warranty claim data for the first item and for the at least one second item over a tenth time interval that is consecutive to the ninth time interval;*
- *creating a ninth proportionality metric for the first item relative to the tenth time interval;*

(see at least pages 241-243, Example 9.2, Figure 1, Table 9.3, page 242-243: "…If claims data are grouped into larger age classes, we use (9.15) to estimate the expected claims per unit for each class. The last five columns of Table 9.3 show results when age at claim is assigned to classes 0-30 days, 31-60 days, and so on, as shown in column 4. Column 5 shows the total claims $n(A_i)$ [see 9.16)] for each age class (A_i), and column 6 shows $R(A_i)$ as in (9.16) but with $R(a)$ defined as in (9.21) to allow for reporting delays. Column 7 shows the estimated average claims per unit $\hat{\Lambda}(Ai)$ for each age class, and column 8 the cumulative estimates $\hat{\Lambda}(a)=\sum_{j=1}^{i}\hat{\Lambda}(A_i)\ldots$"; page 245, Figure 9.3: "…Plots like Figure 9.3 are very useful for tracking warranty claims experience as time progresses. They may also be used to compare claim rates for different time periods or groups of products…")

Lawless and Devore disclose all of the limitations described above. The combination of Lawless and Devore does not disclose the following limitations, but Bovarnick however discloses the following:

- *generating a report it the proportionality metric, the second proportionality metric, the third proportionality metric, the fourth proportionality metric, the fifth proportionality metric, the sixth proportionality metric, the seventh proportionality metric, the eighth proportionality metric, and the ninth proportionality metric are all above the centerline.*
- *generating a report if the proportionality metric, the second proportionality metric, the third proportionality metric, the fourth proportionality metric, the fifth proportionality metric, and the sixth proportionality metric, are increasing in value from the proportionality metric through the sixth proportionality metric..*

(see at least paragraph 134…Figure 20 is a flowchart…In step 2010, a predetermined user, such as a process owner, is automatically notified, for example, by email, if the control limits calculated in step 2008 are determined to have been exceeded in a predetermined fashion, for example, the control limit is exceeded by a set amount or a predetermined number of consecutive data points exceed the control limit…"; column 13, Table 2, lines 52-55: "…Notify_on_runs: "…an email will be sent when a run is detected above or below the center line (7 points in a row, up or down)...Notify_on_trends: "…an email will be sent when a trend up or down is detected (7 points in a row, up or down)…"; Table 2, and column 28, lines 16-55: "…referring to Table 2, column 13, "Notify_on_trends": An email will be sent when a trend up or down is detected (7 points in a row, up or down).....; Figure 20 is a flowchart illustrating a PCMS process…In step 2008, control limits are automatically calculated for control charts. In step 2010, a predetermined user, such as a process owner, is automatically notified, for example, by email, if the control limits calculated in step 2008 are determined to have been exceeded in a predetermined fashion, for example, the control limit is exceeded by a set amount or a predetermined number of consecutive data points exceed the control limit…"; …data is corrected or a chart definition is changed….)

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless and the statistical control chart of Devore with the process control management system (PCMS) and quality navigator (QN) of Bovarnick because it would provide a method for analyzing an expansion of data collection over various time periods, hence providing more data over larger periods, therefore providing better results. The PCMS and quality navigator (QN) of Bovarnick together allows management to view quality control charts for each business process or top level indicator (TLI) and thereby efficiently and effectively evaluating the quality of the output of the process.

20. With respect to Claims 6 and 7,

Lawless, and Devore disclose all of the limitations described above; Lawless further discloses the following limitations:

- *receiving third warranty claim data for the first item and for the at least one second item over a third time interval that is consecutive to the second time interval;*
- *creating a second proportionality metric for the first item relative to the third time interval;*
- *receiving fourth warranty claim data for the first item and for the at least one second item over a fourth time interval that is consecutive to the third time interval;*
- *creating a third proportionality metric for the first item relative to the fourth time interval;*
- *receiving third warranty claim data for the first item and for the at least one second item over a third time interval that is consecutive to the second time interval;*

- *creating a second proportionality metric for the first item relative to the third time interval;*
- *receiving fourth warranty claim data for the first item and for the at least one second item over a fourth time interval that is consecutive to the third time interval;*
- *creating a third proportionality metric for the first item relative to the fourth time interval;*
- *receiving fifth warranty claim data for the first item and for the at least one second item over a fifth time interval that is consecutive to the fourth time interval;*
- *creating a fourth proportionality metric for the first item relative to the fifth time interval;*
- *receiving sixth warranty claim data for the first item and for the at least one second item over a sixth time interval that is consecutive to the fifth time interval;*
- *creating a fifth proportionality metric for the first item relative to the sixth time interval;*

(see at least pages 241-243, Example 9.2, Figure 1, Table 9.3, page 242-243: "...If claims data are grouped into larger age classes, we use (9.15) to estimate the expected claims per unit for each class. The last five columns of Table 9.3 show results when age at claim is assigned to classes 0-30 days, 31-60 days, and so on, as shown in column 4. Column 5 shows the total claims $n(A_i)$ [see 9.16)] for each age class (A_i), and column 6 shows $R(A_i)$as in (9.16) but with $R(a)$defined as in (9.21) to allow for reporting delays. Column 7 shows the

estimated average claims per unit $\hat{\Lambda}(A_i)$ for each age class, and column 8 the cumulative estimates $\hat{\Lambda}(a_i) = \sum_{j=1}^{i} \hat{\Lambda}(A_j)$…"; page 245, Figure 9.3: "…Plots like Figure 9.3 are very useful for tracking warranty claims experience as time progresses. They may also be used to compare claim rates for different time periods or groups of products…")

Lawless and Devore disclose all of the limitations described above. The combination of Lawless and Devore does not disclose the following limitations, but Bovarnick however discloses:

- *calculating a 2-sigma limit above the centerline for the statistical control chart;*
- *calculating a 1-sigma limit above the centerline for the statistical control chart;*

(see at least column 14, lines 14-30: "…An email will be sent when 15 points in a row fall within 1 sigma, "hugging" the center line… An email will be sent when 2 out of 3 points are outside 2 sigma….An email will be sent when 4 out of 5 points are detected between 1 and 2 sigma on the same side of the center line…"; column 18, lines 14-20: "…points are examined as a distribution. The variance is computed for each point. The two highest variance points are dropped from the sample and a new mean is computed. The standard deviation for the remaining distribution is computed. If any point is more than 4 standard deviations from the new mean, it is flagged for possible exclusion…; claim 18: "…automatically calculating control limits for control charts; and displaying the automatically calculated control limits with the control charts….")

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless and the statistical control chart of Devore with the process control management system (PCMS) and quality navigator (QN) of Bovarnick because the distance calculated from the process centerline to any value can be expressed in sigma units. This would provide a more efficient method for charting, collection, maintenance and analysis of statistical control chart data over various time periods.

- *generating a report if at least two of the proportionality metric, the second proportionality metric and the third proportionality metric are greater than the 2-sigma limit.*
- *generating a report if at least four of the proportionality metric, the second proportionality metric, the third proportionality metric, the fourth proportionality metric, and the fifth proportionality metric are greater than the 1-sigma limit.*

(see at least column 13, Table 2, line 50: "…Notify_on_2_of_3: "…An email will be sent when 2 out of 3 points are outside 2 sigma…."; column 13, Table 2, lines 55-58: "…Notify_on_4_or_5_B: "...an email will be sent when 4 out of 5 points are detected between 1 and 2 sigma on the same side of the center line...")

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless and the statistical control chart of Devore with the process control management system (PCMS) and quality navigator (QN) of Bovarnick because it would provide an effective method for notifying and analyzing an expansion of data collection over various time periods. It would quickly identify an out-of-control situation via email, hence an investigation could be conducted to identify causes and take corrective action.

21. With respect to Claim 15,

Lawless and Devore disclose all of the limitations described above. Lawless further discloses:

- *receiving a plurality of warranty claim data for a corresponding plurality of time intervals equal in length and subsequent to the second time interval; creating a plurality of proportionality metrics, with each of the proportionality metrics in the plurality of proportionality metrics corresponding to one of the time intervals in the plurality of time intervals;*

(see at least pages 241-245, Example 9.2, Figure 1, Table 9.3, page 242-243: "…If claims data are grouped into larger age classes, we use (9.15) to estimate the expected claims per unit for each class. . The last five columns of Table 9.3 show results when age at claim is assigned to classes 0-30 days, 31-60 days, and so on, as shown in column 4. Column 5 shows the total claims $n(A_i)$ [see 9.16)] for each age class (A_i), and column 6 shows $R(A_i)$as in (9.16) but with $R(a)$defined as in (9.21) to allow for reporting delays. Column 7 shows the estimated average claims per unit $\hat{\Lambda}(A_i)$for each age class, and column 8 the cumulative estimates $\hat{\Lambda}(a_i)=\sum_{j=1}^{i}\hat{\Lambda}(A_j)\ldots$"; page 245, Figure 9.3: "…Plots like Figure 9.3 are very useful for tracking warranty claims experience as time progresses. They may also be used to compare claim rates for different time periods or groups of products…")

- *comparing the plurality of proportionality metrics to a pattern rule;*

Figure 9.2 shows the pattern of sales by week. …The estimated cumulative probability function F9r) is summarized in Table 9.4. Figure 9.3 shows the

estimated average cumulative claims per vehicle, $\Lambda(a)$; for illustration, we have shown the curves that result from the sales and claims reported up to each of T=91, 182, 273, 365, 456, and 547 days, respectively; that is, these are the estimates that we would obtain approximately 3,6,9,12,15, and 18 months, respectively, after the first cars of that model year were sold. We observe that the estimates at 9-18 months agree well, but those for T=91 and 182 are somewhat lower, suggesting that cars sold early in the model year had a somewhat lower frequency of early claims than cars sold later.....one point to note is that the estimates $\hat{\Lambda}(a)$ for T = 91 have rather large standard errors. Plots like Figure 9.3 are very useful for tracking warranty claims experience as time progresses. They may also be used to compare claim rates for different time periods or groups of products...")

Lawless and Devore disclose all of the limitations described above. The combination of Lawless and Devore does not disclose the following limitations, however Bovarnick as shown discloses:

- *generating a report if any of the proportionality metrics match the pattern rule.*
- *generating a report if at least some of the difference P-values in the plurality of difference P-values match the pattern rule.*

(see at least Table 2, column 14, lines 25-26: "...Notify_on_trends An email will be sent when a trend up or down is detected (7 points in a row, up or down)...")

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless, and the statistical control chart of Devore with the automatic email notification system of Bovarnick because it would immediately alert a process owner or one responsible for a process of an out of control process or indicator. It can quickly alert businesses to incipient

trends in their business activities and marketplace so that appropriate action may be taken to protect and advance a business's well-being.

22. Claim 8 is rejected as being unpatentable over Lawless, in view of Devore, in further view of Osborn et al, US Patent No US 6, 182 048 B1.

23. With respect to Claim 8,

Lawless, and Devore disclose all of the limitations described above. The combination of Lawless and Devore does not disclose the following limitations, however Osborn as shown discloses:

- *the first item and the at least one second item each comprise one of a part, subassembly or an attribute of a vehicle* (see at least Osborn column 5, lines 26-40: "…this invention partitions the vehicle into a plurality of components because it can be shown that there is a correlation between the components of the vehicle and environmental data with the number of warranty claims…")

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless with the statistical control chart of Devore and the vehicle components of Osborne to report warranty claim data specific to vehicle components, parts, assemblies, subassemblies and the like in an effort to improve/detect vehicle quality trends, thereby improving customer satisfaction and productivity.

24. Claims 10, 13 and are rejected as being unpatentable over Lawless, in view of Devore, in further view of Shi et al US Patent No US 6, 772, 034 B1.

25. With respect to Claims 10, and 13,

Lawless and Devore disclose all of the limitations described above. The combination of Lawless and Devore does not disclose the following limitations, however Shi as shown discloses:

- *standardizing the control chart in units of standard deviation.*

(see at least paragraph 36: "...When used herein, the term "normalization" or standardization, represents a mathematical transformation of a distribution's location and spread. For example, if we say X is a random variable whose distribution has a mean, A, and a standard deviation, B, and say Y=(X-A)/B is a random variable whose distribution has a mean of zero and standard deviation of one. If the distribution of X is "Normal," then the distribution of Y is called "Standard Normal." However, the transformation works for our purposes whether X is Normally distributed or not. These statistics are specified in the PCS, and for each statistic listed under Statistical/Plotted Variables in the PCS, there will be a graph. The order (first to last) in which these statistics are listed in the PCS determine their order of presentation (top to bottom) in chart window 1300. On each graph 1311-1313, the target value 1320 is identified, as are the upper control limit 1325 and lower control limit 1330...").

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless, and the statistical control chart of Devore with the Engineering Data Collection subsystem (via the PCS) of Shi because the EDC provides a means to distribute data (to include but not limited to data history, SPC, engineering data analysis) to all the subsystems. The EDC provides a more efficient mechanism for the improvement of quality management objectives in areas such as data collection, data analysis, statistical process control, and corrective action plans.

26. Claims 11, 14, and 17 are rejected as being unpatentable over Lawless, in view of Devore, in further view of Shi, in further view of Rebane, US Patent No US 7, 013, 285 B1.

27. With respect to Claims 11 , and 14

Lawless, Devore, and Shi disclose all of the limitations described above. The combination of Lawless, Devore, and Shi does not disclose the following limitations, however Rebane as shown discloses:

- *calculating a mean P-value from the plurality of P-values, calculating a standard deviation for each of the P-values in the plurality of P-values,*
- *determining a standardized P-value for each of the P-values in the plurality of P-values by subtracting the mean P-value from each of the P-values in the plurality of P-values to create a plurality of difference P- values, and then dividing each P-value in the plurality of difference P-values by the corresponding standard deviation for each of the P-values in the plurality of P-values.*
- *calculating a mean P-value from the P-value in each subinterval, calculating a standard deviation for each of the P-values in each of the subintervals, and determining a standardized P-value for each subinterval by subtracting the mean-P-value from the P-value in each subinterval to create a difference P-value in each interval, and then dividing each of the difference P-values by the corresponding standard deviation.*

(see at least paragraph 85: "…a statistical analysis process module would be capable of computing one or more of the following: Means using real numbers Mean scores using factors (useful for rating scales) Standard deviation Standard error Error variance Z-tests (four tests for the difference between proportions) T-tests (two tests for the difference between means) P-values (a test of the

probability that an event was chance) Significance net difference test (on pairs of columns) Least significant difference test (on means) Paired preference test (on pairs of rows) Chi-squared tests (one or two dimensional and single classification types) Proportions tests (four types) Friedman's two-way analysis of variance Kolmogorov-Smirnov test (on differences between two samples) McNemar's test of the significance of changes F-test for testing differences between a set of means One-way analysis of variance (ANOVA) Significance levels Regression analysis Trend analysis Correlations Co variances…")

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless, the statistical control chart of Devore, and the Engineering Data Collection subsystem (via the PCS) of Shi with the statistical analysis process module of Rebane because it provides an efficient mechanism for merchants to quickly obtain (warranty) information for monitoring levels of dissatisfaction consumers have from warranty claims. The processed data can be sorted and stored in the server for evaluation and presented to the end-use. It can quickly alert businesses to developing trends in their business activities.

28. With respect to Claim 17,

Lawless and Devore disclose all of the limitations described above. The combination of Lawless and Devore does not disclose the following limitations, however Rebane as shown discloses:

- *calculating a plurality of standard error difference in proportion for each subinterval of the second plurality of subintervals;*

(see at least paragraph 85: "…a statistical analysis process module would be capable of computing one or more of the following: Means using real numbers Mean scores using factors (useful for rating scales) Standard deviation Standard

error Error variance Z-tests (four tests for the difference between proportions) T-tests (two tests for the difference between means) P-values (a test of the probability that an event was chance) Significance net difference test (on pairs of columns) Least significant difference test (on means) Paired preference test (on pairs of rows) Chi-squared tests (one or two dimensional and single classification types) Proportions tests (four types) Friedman's two-way analysis of variance Kolmogorov-Smirnov test (on differences between two samples) McNemar's test of the significance of changes F-test for testing differences between a set of means One-way analysis of variance (ANOVA) Significance levels Regression analysis Trend analysis Correlations Covariances…")

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless, and the statistical control chart of Devore with the statistical analysis process module of Rebane because it provides a more efficient mechanism for merchants to quickly obtain (warranty) information in an effort to monitoring levels of dissatisfaction consumers have from warranty claims. It can quickly alert businesses to incipient trends in their business activities and marketplace so that appropriate action may be taken to protect and advance a business's well-being.

Lawless, Devore, and Rebane disclose all of the limitations described above. The combination of Lawless, Devore, and Rebane does not disclose the following limitations, however Shi as shown discloses:

- *normalizing the plurality of P-values relative to the corresponding standard error difference from the plurality of standard error difference in proportion*.

(see at least paragraph 36: "…When used herein, the term "normalization" or standardization, represents a mathematical transformation of a distribution's location and spread. For example, if we say X is a random variable whose

distribution has a mean, A, and a standard deviation, B, and say Y=(X-A)/B is a random variable whose distribution has a mean of zero and standard deviation of one. If the distribution of X is "Normal," then the distribution of Y is called "Standard Normal." However, the transformation works for our purposes whether X is Normally distributed or not. These statistics are specified in the PCS, and for each statistic listed under Statistical/Plotted Variables in the PCS, there will be a graph. The order (first to last) in which these statistics are listed in the PCS determine their order of presentation (top to bottom) in chart window 1300. On each graph 1311-1313, the target value 1320 is identified, as are the upper control limit 1325 and lower control limit 1330…")

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless, the statistical control chart of Devore, and the statistical analysis process module of Rebane with the PCS, specifically the normalization and standardization process of Shi because knowing the mean and standard deviation of each technique permits the application of this mathematical variation (referred to as normalizing) to the data from the technique. This offers the advantages of fewer charts with more rapid accumulation of process history on a single chart.

29. Claim 18 is rejected as being unpatentable over Lawless, in view of Devore, in further view of Rebane, in further view of Shi, in further view of Bovarnick et al, US Patent No US 6,704,015 B1.

30. With respect to Claim 18,

Lawless, Devore, Rebane, and Shi disclose all of the limitations described above. Lawless further discloses the following:

- *comparing the plurality of proportionality metrics to a pattern rule;*

(see at least Figure 9.2 shows the pattern of sales by week. ...The estimated cumulative probability function F(r) is summarized in Table 9.4. Figure 9.3 shows the estimated average cumulative claims per vehicle, $\Lambda(a)$; for illustration, we have shown the curves that result from the sales and claims reported up to each of T=91, 182, 273, 365, 456, and 547 days, respectively; that is, these are the estimates that we would obtain approximately 3,6,9,12,15, and 18 months, respectively, after the first cars of that model year were sold. We observe that the estimates at 9-18 months agree well, but those for T=91 and 182 are somewhat lower, suggesting that cars sold early in the model year had a somewhat lower frequency of early claims than cars sold later.....one point to note is that the estimates $\hat{\Lambda}(a)$ for T = 91 have rather large standard errors. Plots like Figure 9.3 are very useful for tracking warranty claims experience as time progresses. They may also be used to compare claim rates for different time periods or groups of products...")

Lawless, Devore, Rebane, and Shi disclose all of the limitations described above. The combination of Lawless, Devore, Rebane, and Shi does not disclose the following limitations, however Bovarnick as shown discloses:

- *generating a report if at least some of the difference P-values in the plurality of difference P-values match the pattern rule.*

(see at least Table 2, column 14, lines 25-26: "...Notify_on_trends An email will be sent when a trend up or down is detected (7 points in a row, up or down)...")

It would have been obvious to one skilled in the art at the time of the invention to combine the age-specific claims analysis of Lawless, the statistical control chart of Devore, the Engineering Data Collection subsystem (via the PCS) of Shi and the statistical analysis process module of Rebane with the automatic email notification

system of Bovarnick because it would immediately alert a process owner or one responsible for a process of an out of control process or indicator. It can quickly alert businesses to incipient trends in their business activities and marketplace so that appropriate action may be taken to protect and advance a business's well-being.

Conclusion

31. Any inquiry of a general nature or relating to the status of this application or concerning this communication or earlier communications from the Examiner should be directed to **Kimberly L. Evans** whose telephone number is **571.270.3929.** The Examiner can normally be reached on Monday-Friday, 9:30am-5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, **John Weiss** can be reached at **571.272.6812.**

32. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://portal.uspto.gov/external/portal/pair <http://pair-direct.uspto.gov >. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866.217.9197** (toll-free). Any response to this action should be mailed to: **Commissioner of Patents and Trademarks Washington, D.C. 20231**or faxed to **571-273-8300**. Hand delivered responses should be brought to the **United States Patent and Trademark Office Customer Service Window**: Randolph Building 401 Dulany Street, Alexandria, VA 22314.

/Kimberly Evans/Examiner, Art Unit 3629

May 27, 2008

/John G. Weiss/

Supervisory Patent Examiner, Art Unit 3629